

# FACT SHEET:

## Precautions and facts regarding toxic algae at Nebraska Lakes

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Nebraska Department of Health and Human Services Regulation and Licensure and the  
Nebraska Department of Environmental Quality*

### **What is toxic blue-green algae?**

Although it technically is not a true algae, what is commonly referred to as toxic blue-green algae refers to certain strains of cyanobacteria that produce toxins. These toxins were found in a number of Nebraska lakes in 2004 and 2005.

Toxic blue-green algae can dominate the algal populations of a lake under the right combinations of water temperature, low water depths, and nutrients (such as, high nitrogen and phosphorus concentrations from wastewater discharges and runoff from agricultural land and communities).

### **What should I look for to avoid toxic algae?**

The toxic strains of blue-green algae usually have heavy surface growths of pea-green colored clumps, scum or streaks, with a disagreeable odor and taste. It can have a thickness similar to motor oil and often looks like thick paint in the water. Algae blooms usually accumulate near the shoreline where pets and toddlers have easy access and the water is shallow and more stagnant. It is important to keep a watchful eye on children and pets so that they do not enter the water. Aspects to watch out for include:

- Water that has a neon green, pea green, blue-green or reddish-brown color.
- Water that has a bad odor.
- Foam, scum or a thick paint-like appearance on the water surface.
- Green or blue-green streaks on the surface, or accumulations in bays and along shorelines.

### **What are the risks and symptoms?**

Pets and farm animals have died from drinking water containing toxic blue-green algae (or licking their wet hair/fur/paws after they have been in the water). Blue-green algae toxins have been known to persist in water for several weeks after the bloom has disappeared.

The risks to humans come from external exposure (prolonged contact with skin) and from swallowing the water. Symptoms from external exposure are skin rashes, lesions and blisters. More severe cases can include mouth ulcers, ulcers inside the nose, eye and/or ear irritation and blistering of the lips. Symptoms from ingestion can include headaches, nausea, muscular pains, central abdominal pain, diarrhea and vomiting. Severe cases could include seizures, liver failure, respiratory arrest – even death, although this is rare. The severity of the illness is related to the amount of water ingested and the concentrations of the toxins.

### **Are some people more at risk?**

Yes. Some people will be at greater risk from toxic blue-green algae than the general population. Those at greater risk include:

- Children. Toddlers tend to explore the shoreline of a lake, causing greater opportunity for exposure. Based on body weight, children tend to swallow a higher volume of water than adults, and therefore could be at greater risk.
- People with liver disease or kidney damage and those with weakened immune systems.

#### **Here are some tips on what you can do, and things to avoid:**

- Be aware of areas with thick clumps of algae, and keep animals and children away from the water.
- Don't wade or swim in water containing visible algae. Avoid direct contact with algae.
- Make sure children are supervised at all times when they are near water. Drowning, not exposure to algae, remains the greatest hazard of water recreation.
- If you do come in contact with the algae, rinse off with fresh water as soon as possible.
- Don't boat or water ski through algae blooms.
- Don't drink the water, and avoid any situation that could lead to swallowing the water.

#### **Is it safe to eat fish from lakes that are under a Health Alert?**

Although research is limited, most information to date indicates that toxins do not accumulate significantly in fish tissue, which is the meat that most people eat. At this time, fishing is permitted at lakes that are under a Health Alert. This issue is continuing to be studied, and this web site will be updated if more conclusive information becomes available.

#### **Where can I find out more information about lake sampling for toxic algae?**

The Nebraska Department of Environmental Quality (NDEQ) is conducting weekly and twice-monthly samplings at select public lakes that are either popular recreational lakes, or have historically had toxic algae problems. A list of lakes being tested in 2006 can be found at the end of this Fact Sheet, and the sampling information is updated weekly on the agency web site, [www.deq.state.ne.us](http://www.deq.state.ne.us).

#### **What should I do if I have concerns regarding a private lake?**

As part of the University of Nebraska Water Quality Extension Program, UN-L has developed a "Volunteer Monitoring Program" and lake test kits that will be sent to interested lake associations, owners, and individuals so they can collect a sample and send it to UN-L for analysis. To obtain more information and a test kit please contact the program at (402) 472-7783, or (402) 472-8190.

#### **If I think a public lake has a toxic algae bloom, who do I call?**

Please contact NDEQ's Surface Water Unit at (402) 471-0096, or (402) 471-2186.

#### **If I am experiencing health symptoms, who do I call?**

If you experience health symptoms, notify your physician, and also report it to the Nebraska Health and Human Services System at (402) 471-2937. You can also contact the Nebraska Regional Poison Center at 800-222-1222 for more information.

### **Updated information 2006: “Fly-overs” help detect problems early**

In 2005, the NDEQ teamed up with the University of Nebraska-Lincoln researchers to go to the air to monitor algae problems. Lakes that have problems with algae can be identified with a camera-like sensor mounted to an airplane. The sensor, called a hyperspectral sensor, measures absorbance and reflectance of sunlight in distinct ways that allows water properties to be mapped from high altitude measurements. These “fly-overs” will be used again in 2006 at Fremont State Lakes, to help in the early detection of areas where toxic algae problems may be developing.

### **Updated Information 2006: Groundwater sampling**

The NDEQ will be installing and sampling four to six monitoring wells this spring near Fremont Lake #20. The wells will be used to determine groundwater flow and water quality in the shallow aquifer around the lake during the summer months. The goal of the study will be to determine if algae toxins from the lake migrate into nearby groundwater.

### **Updated information 2006: Expanding toxic algae sampling and bacteria sampling**

In 2004, which was the first year that the state conducted sampling for toxic algae, monitoring was targeted primarily in areas that were known or suspected to have toxic algae problems. Since then, NDEQ’s monitoring strategy has shifted to a greater emphasis on routine weekly sampling, in order to develop a more proactive warning system. In 2005, NDEQ began combining the toxic algae sampling with another weekly NDEQ water sampling program, in which NDEQ tests public swimming areas for *E. coli* bacteria. This year, the two programs have been fully merged into one weekly sampling network.

The bacteria monitoring program, which has been in existence for many years, has a similar purpose to the toxic algae monitoring program – that is, to keep the public informed about water quality issues at recreational beaches. The weekly sampling program assesses the bacteria level in an effort to determine the suitability or safety for full body contact recreation activities, such as swimming, water skiing, etc.

Combining the sampling programs creates greater efficiencies in the overall monitoring network. For both bacteria and toxic algae samples, the NDEQ analyzes its own samples. This not only saves considerable money, but the analysis takes much less time. This information is posted on the NDEQ web site by the end of the same week that the sample was taken, which provides more updated information to the public. Typically, it takes a few weeks to obtain sampling results when it is contracted to an outside lab.

The network of lakes being sampled has increased substantially in the past several years. In 2002, 11 lakes were sampled for bacteria, and sampling for toxic algae did not begin until 2004. In 2005, 33 lakes were sampled routinely for bacteria, and many were also sampled for toxic algae at the same time. In 2006, as many as 35 beaches at 31 lakes across the state will be sampled on a weekly basis for both toxic algae and bacteria, and four lakes will be sampled twice a month (see list below). Much of this increase was due to assistance from other agencies and organizations, and an EPA grant which provided analysis equipment to be dispersed across the state. Those assisting include the Natural Resources Districts, Nebraska Public Power District, the Nebraska Game and Parks Commission, and the U.S. Army Corps of Engineers.

Every Friday, DEQ will post the results that have been compiled for the week on their web site and notify local media and the public of any resulting Health Alerts.

### **Updated information 2006: Lakes to be sampled**

The following lakes will be sampled weekly, May through September, 2006 for both toxic algae and bacteria:

Morman Island Lake at Grand Island  
Elwood Reservoir near Elwood  
Johnson Lake near Lexington at southeast swimming beach and at north end  
Lake McConaughy at Martin's Bay Beach  
Bridgeport Middle Lake at swimming beach  
Minatare Lake near Scottsbluff at east swimming beach  
Maloney Reservoir near North Platte at outlet beach  
Sutherland Reservoir at Hershey Beach  
Carter Lake near Omaha at north boat ramp on Nebraska side  
Louisville Lake #2 swimming beach  
Two Rivers State Recreation Area Lake #4 near Venice  
Wagon Train Lake near Hickman  
Bluestem Reservoir near Martell  
Conestoga Reservoir near Denton  
Pawnee Reservoir near Emerald, east beach and west beach  
Branched Oak near Malcolm, Liebers Point Beach and Area 10 Beach  
Swan Creek Reservoir 5A near Tobias  
Big Indian Reservoir near Odell  
Cub Creek Reservoir #12A near Plymouth at swimming beach  
Fremont Lakes #9 at swimming beach  
Fremont Lakes #10 at swimming beach  
Fremont Lakes #20, at east beach and west beach  
Iron Horse Trail Lake near DuBois at Iron Horse Beach  
Kirkman's Cove Reservoir near Humboldt at swimming beach  
Wirth Brothers Lake near Tecumseh  
Lake North near Columbus at northwest swimming beach  
Glenn Cunningham Lake in Omaha at the marina boat ramp  
Lewis and Clark Reservoir at Weigland Beach on Nebraska side  
Lake Yankton (Cottonwood Lake)  
Willow Creek Reservoir near Pierce  
Maskenthine Reservoir near Stanton

The following lakes will be sampled two times per month, May through September, 2006 for both toxic algae and bacteria:

Oliver Reservoir near Kimball at swimming beach  
Box Butte Reservoir north of Hemingford at north swimming beach  
Merritt Reservoir southwest of Valentine  
Valentine Mill Pond